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RUFUS PORTER, EDITOR.

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☞ *See Advertisement on last page.*

SNOW.

E'en the old posts, that hold the bars,
And the old gate,
Forgetful of their wintry wars
And age sedate,
High capped, and plumed, like white hussars,
Stand there in state.

The drifts are hanging by the sill,
The eaves, the door;
The haystack has become a hill,
All covered o'er
The wagon loaded for the mill
The eve before.

Maria brings the water pail—
But where's the well?
Like magic of a fairy tale,
Most strange to tell,
All vanished—curb, and crank, and rail—
How deep it fell!

The woodpile too, is playing hide;
The axe—the log—
The kennel of that friend so tried—
(The old watch dog,)
The grindstone standing by its side,
All now incog.

The bustling cock looks out aghast
From his high shed,
No spot to scratch him a repast—
Up curves his head,
Starts the dull hamlet with a blast,
And back to bed.

Old drowsy dobbin, at the call,
Amazed, awakes;
Out from the window of his stall
A view he takes,
While thick and faster seem to fall
The silent flakes.

THE PRAIRIE.

Huzza! and away o'er the prairie we'll bound
And laugh as the forests grow dim;
A soul-stirring tramp shall re-echo the sound,
And our courser keep pace with the whim.

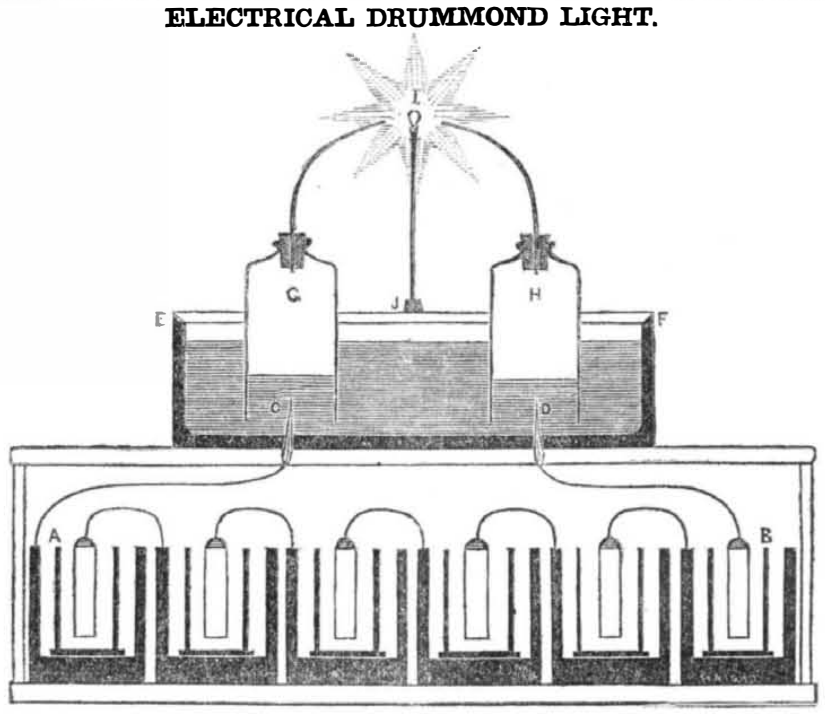
Oh! how proudly he leaps each ravine and stream,
How he prances 'midst flowers and birds,
What to us is the city, its pomp and its dream
As we dash by the wild-sweeping herds!

Oh there's life in the plain: the deer wildly bounding,
The buffalo glad, with his dark waving mane,
The merry loud laugh, no wanton astounding,
Huzza! and away on the gay 'namell'd plain.

What to us is the meed of a languid affection,
Corrupted by sloth, and lascivious care?
Each moment we live has its own sweet correction,
And a love breathing spirit ye have not to share.

Then away then! nor linger on hill or in valley,
The dew is but fresh on the wide-spreading main,
Away! for there's life in the spirits that rally,
To joy in the incense that springs in the plain!

ELECTRICAL DRUMMOND LIGHT.



We sometime since intimated a promise to give an explanation with illustration, of the newly invented apparatus for producing the intense and brilliant light, known as the Drummond Light, and that by means of the combustion of water only, by the aid of galvanic electricity. We now present a sectional representation of the apparatus arranged to illustrate the principle in a compact and simple form. It is well known to all who are conversant with blast furnaces, that when any solid substance is intensely heated it by comes incomparably more brilliant or luminous, than the most intense flame: and it is well known to chemists that a more intense heat is produced by the combustion of oxygen and hydrogen gas,—a jet of each burned in conjunction,—than by the combustion of other fuel. The most intense light is therefore produced by heating some solid substance by the combustion of these two gases, and that in the same proportion in which they are combined in the composition of pure water. No common substance is found to be less fusible, nor capable of becoming more luminous by heat, than pure lime. Hence the Drummond light is produced by burning the oxygen and hydrogen gases in contact with a small piece of lime. These gases are produced in a pure state, and in due proportion, by the decomposition of water, which is readily effected by a current of galvanic electricity: for when water is made to constitute a part of a galvanic circuit, if the action of the batteries is brisk, these gases are liberated and produced at the poles or ends of the wires which conduct the electric fluid to and from the water. The best batteries for this purpose consist of plain cups cast of pure zinc, and amalgamated inside with mercury. Within each cup is placed another and a smaller cup,—usually called cells by way of distinction—of unsized porcelain or artificial stone; and within each cell is placed a strip of platina plate about as thick as common letter paper; and each plate is connected by a copper wire to the zinc cap of the next battery; but the last plate of the series is connected via the circuit, to the *first* cup of the series. The most common and convenient size of these cups, is 2 1-2 inches in diameter inside, and three inches deep; and each plate should be 3 inches long, 3-4 inch wide. It is not yet satisfactorily ascertained what number of batteries connected consecutively in each series, are the most economical for this purpose: but one series of six batteries only is represented in the engraving, though several sets are required to produce the gases in sufficient quantity to support a brilliant light. The batteries are charged for operation by filling the cells with nitric or nitrous acid, and the zinc cups with a mixture of one part sulphuric acid with twelve parts water. This series of batteries is represented from A to B. in the engraving; A being the positive and B the negative poles; but at the termination of the two wires, where they enter the vessel above, the poles are reversed, C is the negative and D the positive poles. These terminations consist of narrow and pointed slips of platina plate. The vessel E F, is made of glass, porcelain or wood, and is nearly filled with water acidulated with one part sulphuric acid to 100 parts water. This vessel or font as it is termed, is covered with a lid of wood, which supports two glass jars G H, both of which are open at the bottom where they approach nearly to the bottom of the font, but the tops thereof are closed with perforated corks, in which are inserted two small metallic tubes through which the gases escape from the jars, and are thrown upon the lime I.—The piece of lime is cut in a conical form, with the point downward, and supported by a socket of platina, attached to a wire extending up from the lid at J. When the battery connections are made, the electric current passes from B to D, producing bubbles of oxygen gas which rise into the jar H, displacing part of the water, while the electric fluid passes through the water to the point C, where it produces a proportional quantity of hydrogen gas which rises in the jar G, while the current returns to the battery at A. The gases being thus produced and ignited at the point of contact, an intense light is supported by the action of the galvanic battery. The apparatns complete will cost $50.

Clever Retort.

A servant girl in the town of A., whose beauty formed matter of general admiration and discussion, in passing a group of officers in the street, heard one of them exclaim to his fellows: "By heaven, she's painted!"

"Yes sir, and by heaven only!" she very quietly replied, turning round.

The officer acknowledged the force of the rebuke and apologized.

A Peace-able Regiment.

The Boston people have been placing a part of the regiment of volunteers, under bonds to *keep the peace* for two months. It will probably require that time for them to get on fighting ground.

The Frost saw the pretty Flower, and sought to woo: "*Wilt* thou?" said the Frost—and the Flower wilted.

The Bear and the Tea-kettle.

The bears of Kamschatka live chiefly on fish which they procure for themselves from the rivers. A few years ago the fish became very scarce. Emboldened by famine and consequent hunger, the bears instead of retiring to their dens, wandered about and sometimes entered the villages. On a certain occasion one of them found the outer gate of a house open, and entered in; the gate accidentally closed after him. The woman of the house had just placed a kettle of boiling water in the court. Bruin smelt it, but burnt his nose Provoked at the pain he vented all his fury on the tea-kettle. He folded his arms around it, pressed his whole strength agains his breast to crush it; but this of course only burnt him the more The horrible growling which the rage and pain forced from the poor animal now brought the neighbors to the spot, and Bruin by a few shots was put out of his misery. To this day, however, whenever anybody injures himself by his own violence, the people of the village call him the "bear and the tea-kettle."

Hair-breadth Escape.

We learn from the Amherst Express, that Mr. Edmuud Smith, of South Hadley, met with a narrow escape on Monday week. He was in North Leverett, where he had been with two horses after a load of shingles, for the new Paper Factory to be erected at "Moody Corner," in South Hadley, and while descending the Rattle Snake Gutter Road, the team became unmanageable from ice and snow on the feet of the horses; and the railing at the side of the road giving way, horses, waggon and load, were forced out of the travelled path upon the steep side hill west of it. The road at this point is some 75 feet above the bottom of the vesly west of it, and the slope is exceedingly steep. The shingles were scattered down the side of the hill, the wagon was thrown against a tree and its progress arrested and the horses rolled to the foot of the hill among the rocks and trees—one of them pitching over lengthwise three times before reaching the bottom. Strange as it may appear, neither of the horses were killed, and Mr. S. escaped without personal injury.

Monkeys.

The Monkeys in Exeter 'Change used to be confined to a line of narrow cages, each of which had a pan in the centre for its tenant's food. Chancing to be present one evening at supper time, we observed that when all the monkeys had been supplied with messes, hardly any of them ate out of his own pan. Each thrust his arm through the bars, and robbed his right or left hand neighbor. Half of what was so seized, was spilt or lost in the conveyance, and while one monkey was so unprofitably employed in plundering, his own pan was exposed to similar depredations. The mingled knavery and absurdity was strikingly human.

"Did His Best."

A fellow applied to one of our Senators, at the present session of the Legislature, to get him some office; and to support his claim, he told the Senator he had fought with Jackson, at New Orleans. The honorable member did not exactly give credence to his story, and to test its truth, inquired of him why they let the Britsh take the city?

"We could'nt help it," replied the candidate, "*we fit like* ———, *but they were too many for us.*"

A Post Office on Wheels.

Since the running of cars on the Northern Railroad, and to obwate the necessity of detaining the Boston mail to be changed at Concord, N. H., a short car is fitted up for the purpose, and a deputy of the Concord Post Office proceeds to Franklin, preparing the way mails for delivery, and the larger ones for the North, against the cars reach Franklin.

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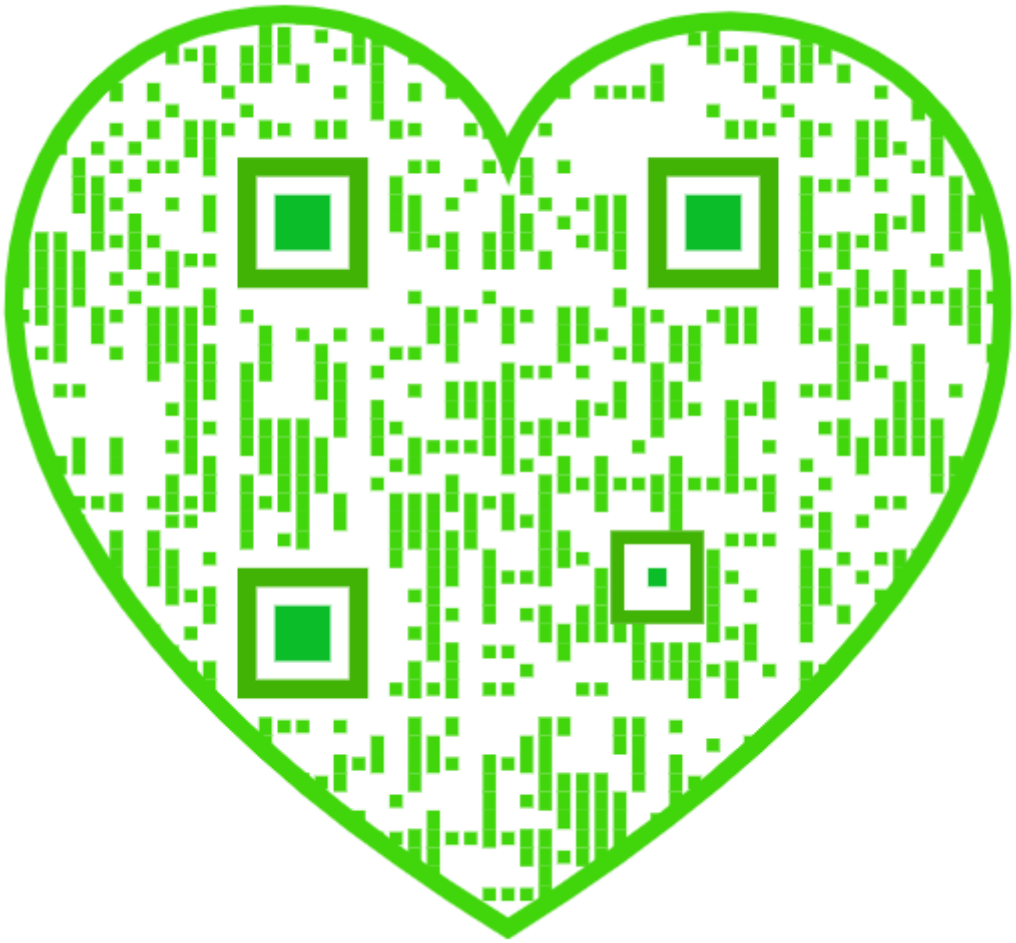
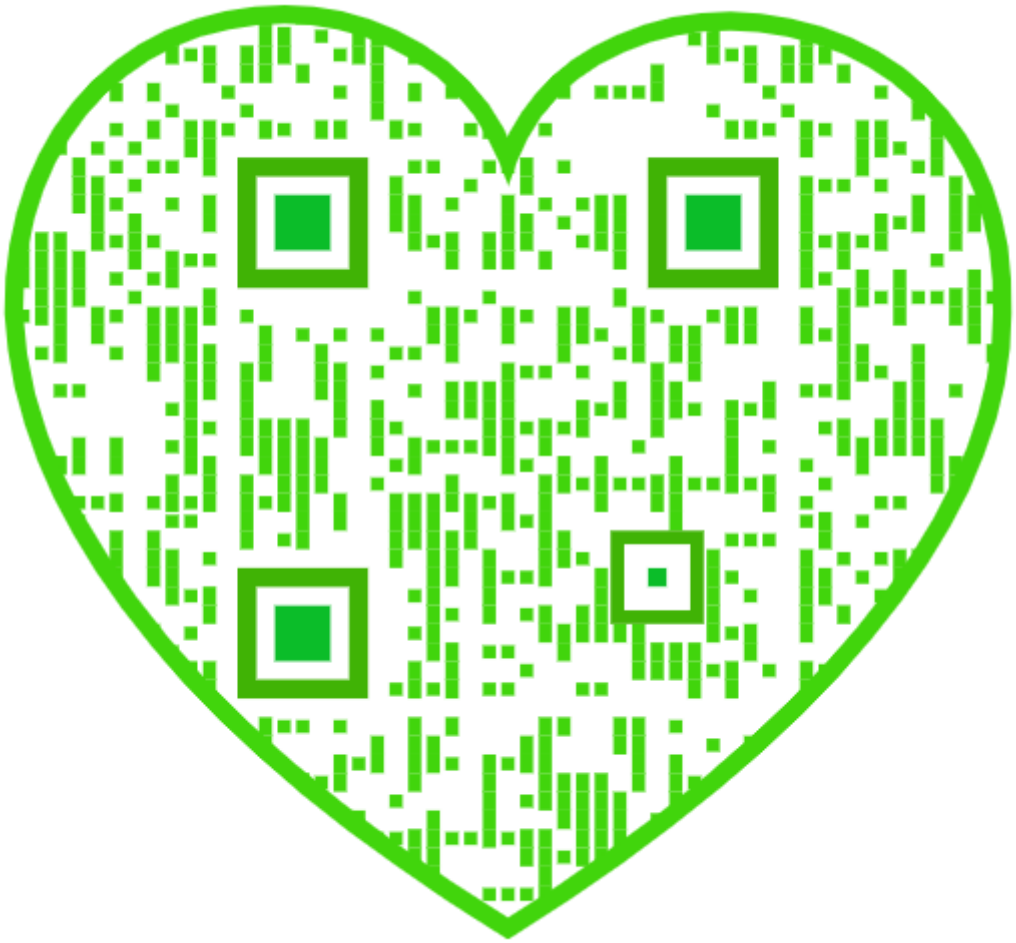
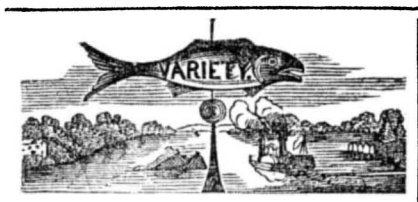






Recent Fires.

It will be seen by the following that Massachusetts has had a full share of destructive fires in addition to the great fires in Boston.

At Fall River, the dye house of the American Print Works, was totally destroyed on the night of Thursday, week. Loss $3000.

In Roxbury, Mass. the turpentine works of F. Simmons This factory has been twice burned within a year. An old factory building also in Roxbury, near the railroad depot, and valued at $6000, has been consumed.

In Lowell, five or six stores and dwellings on Merrimack street, consumed with a large quantity of goods, books, jewelry, &c.

In Needham, a large barn owned by Mr. J. F. Richards, was consumed with two horses, three cows and a yoke of oxen It was set on fire by an incendiary who drove up in a wagon, ignited the barn with a match, and then rode off.

In Abington the box manufactory of Capt. J. Hersey, together with 30,000 feet of lumber.

In Hingham, a large building occupied as a sawing and planing mill, and with other machinery.

In New Haven, Ct. the extensive cabinet warehouse of Sims & Smith, together with Cookes' carriage factory buildings, and a large quantity of furniture.

At Weathersfield, a weaving and knitting factory, occupied by Ives Hooker & Co. Loss $20,000.

At Humphreysville, Ct. the paper mill of Smith & Bassett with all its contents. About $8000 worth of India rubber was stored in the mill, and mostly consumed. Entire loss, $10,000.

At Trenton, N. J. the Rising Sun Hotel kept by Mr. J. English—the largest and most popular hotel in that city.

At Newton, N. J. the Court House was destroyed and other buildings damaged in its vicinity.

At Alleghany, Pa. the dwelling house of Anson Benedict was consumed during the abscence of the parents and three children perished in the flames.

At the the Grandes Bergeronnes, near the mouth of the Saguenay River, the house of Eli Hudon was burned, and a child six years old perished.

At Lavarhie, near Montreal, Ca., the house of M. Perrault was consumed with four persons—two men and two children.

At Ripley, Ohio, a great conflagration has occurred, extending over twenty-one streets. About one fourth part of the town is destroyed.

At Utica, N. Y. a large brick building four stories high, and 146 feet long, together with an iron foundry, and plough factory. Loss $10,000.

At Cleveland, O. five fires in one week, destroyed several houses, stores, and shops.—Among the sufferers is mentioned the name of S. S. Stone—a name familliar with several of our eastern subscribers.

At Memphis, Tenn., a large stable with 18 horses was consumed.

In this city, as usual, several serious fires, but we seldom think a fire in the city worth noticing, unless it takes up a large portion of a square.

Iron Ore in North Adams.

Extensive and inexhaustable deposits of iron ore have been discovered within a few months, in North Adams, Mass., where a furnace for the manufacture ot pig iron has recently been established. The sum of $50,000 has been expended in the necessary buildings and apparatus, and the proprietors are now making four tons of iron a day, of a good quality.

The Blockade.

The New Orleans papers assure us that the members of the Mexican Congress absolutely ridicule our blockade off Vera Cruz. The most valuable cargoes are continually shipping into that port.

Incident of the Freshet at Dayton.

Two young men of Dayton, one named David Johnson. and the other Joseph Barnett, made several ineffectual attempts to reach a house which was surrounded by the flood, and in which were three men, three women, and nine children. At length they were about to give up making further effort—the flood, in the mean time, threatening every moment to sweep the habitation away, when a little child appeared at one of the windows, and begged them to save her. The noble pair made another attempt, and at imminent peril of their lives, with the aid of a skiff, they saved all who resided in the dwelling.—*Reville.*

Mount Etna.

A letter from Naples of Feb. 20th, states that the borders of the crater of Mount Etna have become considerably extended. Of the five new craters that have been formed, two were still smoking, and from the southermost small flames are to be seen issuing in the night. From the furthest to the eastward, thick columns of smoke were emitted, and clothed the slope of the mountain as with a shining mantle of snow.

Mr. Calhoun's Speech.

In the U. S. Senate on Saturday, the three million bill was taken up, and Mr. Calhoun took the floor and made a brilliant speech on the question, which was listened to by a crowded floor and galleries. He was in favor of letting Mexico know the terms upon which a peace would be accepted by the United States; and then without inviting her concurrence, proceed to define our boundaries, occupy the territory claimed with troops, and act entirely on the defensive.

A Dangerous Bridge.

A span of fine horses belonging to Mr. Lansing of Greenbush, broke through the ice at the Greenbush crossing a few days since and were drowned. We should think it advisable to have inspectors appointed in such cases by the proper authorities, to decide when the ice bridges become unsafe, and prohibit travel accordingly.

Cold on the Prairies.

Of thirty men who left Santa Fe in company on the 2d of November, three were frozen and perished by the way. Those who are accustomed to roam in the dense forests of the north in winter, have but a faint idea of the bleakness of the shelterless prairies.

Manifestation of Respect.

An English paper states that the moment the news reached Windsor of the death of the father of Prince Albert, the whole of the shutters of the shops throughout the town were partially closed as a mark of respect to the memory of the Prince Consort's illustrious parent.

Military Wings.

"Every army has two wings." And a remarkable fact has been noticed relative to them, viz; they assist the army to fly the quickest when they are broken. Cases are on record, however, where they have flown before the main body has found it out; and examination has proven that the *left* wing invariably left first. It is also remarkable that when the left wing has left, the right wing becomes 'left' unless it changes its position.

Lake Superior Copper.

Phelps, Dodge, & Co. of this city, received a consignment of 30 tons of Copper recently from Eagle Harbor. In the lot are five boulders of the pure metal weighing 8,700 pounds. Lake Superior Copper is now used at the Sheet Brass Factory, at Waterbury, Conn. and is of very rare quality.

"A Fool and his Money, &c."

We have often derided the folly of those who enslave themselves to accumulate wealth for their children. The Baltimore Clipper states that a wealthy young man from Virginia about 21 years of age, who had just received a portion of his fortune in the shape of $10,000 cash, lost it all a few nights since at a gaming table. Probably the rest will soon follow.

Snow in Maine.

On the 30th ult., a fierce snow storm and gale of wind were raging in the Penobscot valley; the snow was falling fast and already covered the ground to the depth of 3 feet.

A Great Bridge.

The railroad bride over the Susquehannah river at Harrisburgh, just finished by the Cumberland Valley Railroad Company, is an immense structure.

The entire length of the bridge is three thousand nine hundred and ninety-two feet, or 8 feet of four thousand. It is built upon an improved double lattice plan—the invention of Mr. Kirkpride himself—there being two double and two single segments of lattice. There are twenty-three spans, averageing one hundred and seventy-three feet, and two arched viaducts—one fifty-three feet, and the other eighty-four feet long. There are two carriage ways, above which, immediately under the roof, is the railway track.

New and Valuable Books.

"The Elementary Principles of Ed ucation founded on the nature of man," by Spurzheim; with an appendix by S. B. Wells, containing a description of the temperaments, and a brief analysis of the Phrenological faculties, constitute under various heads, the contents of a book of 330 pages, just published by Fowler & Wells, 131 Nassau st. Also by the same firm, Physiology, animal and mutual, applied to the preservation and restoration of "health of body and power of mind." Much could be said—and should be said,—in favor of these works, but as our limits will not admit of our doing them justice in this number, we shall avail ourselves of another opportunity to notice them more at length. The price of each is 75 cents.

Essex County Constellation.

This is the title of a superb quarto published weekly at Newburyport and Salem, Mass., by John S. Foster, Esq. We have before intimated the difficulty of indicating a preference among so many first rate papers with which we have the pleasure of an exchange; but we venture to say that no person who examines a few numbers of the "Constellation" will be readily persuaded that it has many rivals in excellence in the United States.

Brisk Business.

A Middletown, Ct., paper states that at the great axe manufactory at Collinsville, in that state, the works are kept going night and day. The company have two sets of hands, and are yet unable to supply all their orders. Also, that the India Rubber Company in Waterbury run their works night and day—having two sets of hands.

Demand for Iron in England.

Extensive importations of iron have recently taken place, especially from Sweden. One vessel has brought 10,855, another nearly 14,000, and a third the large quantity of 18,340 bars of the article. Numerous other vessels have arrived from the same places with large cargoes, varying from 5000 to 10,000 bars of the same description of merchandize on board. According to present appearances, we may expect to see cargoes of iron shipped from this country to Europe within ten years.

Croton Water Proceeds.

The receipts of the department from 1st May last to 1st February inst., have been $177,606 57—an increase of $30,000 over the receipts of the corresponding time in 1845–6. The expenditures for the same time have been $43,704 25.

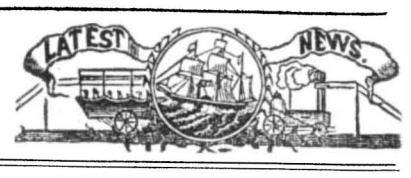
Ingenious Mechanism.

A New Orleans paper describes a beautiful miniature steamboat with engine complete and in operation, built entirely by a negro who is engaged in the up river trade. The boat is abou 18 inches long, and of about *ten pounds tonnage*, and is put in operation by a spirit lamp.

Worcester.

The Telegraph Office has been removed from the Exchange to the depot of the Boston and Worcester Railroad, and a room has been fitted up for the purpose.

There was a fearful tempest on the night of the 23d ult at Mobile. The thunder and lightning was tremendous. The lightning broke into the house of a Mr. Richards, the family being absent, and having disturbed every room in the building, and done a great deal of mischief, it went out at the opposite sides.



Late from Mexico.

Dates from Antonio Lizardo, to the 20th of January have been received at that port, by an arrival from Brazos Santiago, the contents of which include reports of the utmost importance.

The report of primary interest is, that the Mexican Congress, had passed a law to raise $15,000,000 from the churches, which law was opposed by Santa Anna, when his troops, burning with exasperation, shot him dead upon the spot. The churches of Mexico were all closed, and the greatest excitement prevailed throughout Mexico in relation to the passage of the bill. These reports require confirmation.

The Committee for collecting aid for the volunteers in Massachusetts have raised already $1200, and are still persevering. We hope they will shame their parsimonious Legislature.

Whitford addressed a young lady who was knotting a fringe, as to what she was doing?

"Knotting sir," she replied, and enquired in turn. "Pray Mr. Whitford can you knot?"

"Indeed madam, I can *not*," he replied.

A bill has been reported by a select committee of the Ohio Legislature, to abolish capital punishment in all cases, and substitute imprisonment for life.

It is stated that a single house in Cincinnati made seventy five thousand dollars in one day, by the advance of flour occasioned by the Hibernia's news.

Many of the teamsters in Maine have pledged themselves in combination, that they will not haul or convey any ardent spirits into the country for the trade.

The Mississippi river, opposite St. Louis, is much impeded with ice. It would find a good market at New Orleans, if it would but keep cool.

The village of St. Joseph in Missouri, which ten years ago, was hardly known as a settlement, now contains about a thousand inhabitants.

A freight train consisting of a hundred and sixty cars, laden with pork, flour, &c., was recently run over the Western railroad from Albany to Boston.

A Methodist church at Nashville, Tenn., has raised funds to constitute Gen. Taylor and several of his officers life members of a missionary society.

A girl has been arrested in Albany for appearing in the streets without being properly dressed. How very rigid the Albany moralists have become.

It is stated that in Peru there are now sixteen mines of silver, and forty-two of copper, most of them being worked by American and English Companies.

Telegraphic communication was exchanged between New Haven and Toronto, Upper Canada, on Wednesday last—a distance of 900 miles!

The Naumkeag (Mass.) Cotton Factory Co. are now erecting a steam mill, which will cost over half a million dollars, and contains 30,000 spindles.

Thirty-eight thousand dollars have been subscribed in the village of Rockport, Mass., for the establishment of a factory there, for the manufacture of cotton ducks.

The weather at Franconia, N. H. has been cold as usual. The thermometer has indicated twenty two degrees below zero.

The Pope is said to have abolished the salt tax; also the custom of "kissing the Pope's toe," i e. the crucifix on the toe of his slipper.

A leather belt, 69 feet long, 24 inches wide, weighing 236 pounds, was made in Lowell, for a 200 horse power engine.

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BATTLE OF WATERLOO.

The voice of rampant war was hushed,
And carnage slept within its lair,
The noise of battle steeds that rush'd
To combat, died upon the air.

Dark was the scene where thousands slept,
Uncoffin'd in their vital blood;
The soul-enharden'd soldier wept,
To view destruction's solitude.

There lay the noble and the proud,
The valiant hearted and the brave—
Congealing blood their only shroud,
The trodden sward their only grave.

Prostrate upon the crimson ground,
A lifeless form of beauty lay:
Britannia's warriors gathered round,
To gaze upon that beauteous clay.

Her dark blue eyes half clos'd in death,
Through sable lashes dimly shone;
Her lips, from whence escap'd her breath,
Were pallid as the Parian stone.

An infant like the rose in bloom,
Slept sweetly in the arms of rest,
Unconscious of her mother's doom,
It clung around her icy breast.

Tears gathered in the chieftain's eye,
As he upraised the sleeping child;
His bosom vented one deep sigh,
The babe awoke, and on him smil'd.

That smile was like Promethean fire,
Each passion felt its lambent flame;
'Twould calm to mildness fiercest ire,
And clothe the savage mind with shame.

Their bayonets the green sward turn'd,
That tears of sympathy did lave;
There lay the soldier's wife unmourn'd,
And requiems chaunted o'er her grave.

Meteoric Observations.

E. Merriam, Esq. of Brooklyn, occupying a favorable situation for the purpose, and having provided himself with the most perfect instruments or scientific apparatus, has for a year or two past, made daily and sometimes hourly observations of the temperature and electrical state of the atmosphere, with the changes, variations and equilibriums thereof, whereby he has in many instances discovered and accordingly published indications of earthquakes, and other convulsions of the elements in distant parts of the world, at the time of their occurrence, although several weeks or months have sometimes elapsed before direct intelligence has reached us. In an article published in the Brooklyn Star of Nov. 28th, Mr. Meriam remarks as follows:

"The temperature recorded by me and noted in the Star, is that indicated by meteoric wires, of a peculiar construction. In warm weather these wires accord with the ordinary thermometer, but in cold weather they differ from 10 to 20 degress, and probably may vary more than this during intense cold; but notwithstanding this disagreement, they mark all convulsions with unerring accuracy. Long continued, and carefully recorded observations, may enable me to understand this disagreement and explain it, but at present it is a mystery. The wires support an appendage of large loadstone, from the magnetic cove in Arkansas.—They extend high into the atmosphere, one pointing to the northeast, and the other to the southwest; are pointed with tin, lined with a copper wire, which connects with the iron rods descending into the water resting in and beneath the surface of the ground."

Prior to this date, about the 15th of September, an extraordinary equilibrium was noticed by Mr. Meriam as indications of an earthquake, and the correctness of these indications was subsequently confirmed by intelligence of the earthquake of Cape Haytien, which was immediately followed by the storms in which the steamer Great Western was periled, and the Great Britian lost.

In our last number, we published an account of an extraordinary phenomenon on Lake Superior,—the lake suddenly receding and falling seven feet, and then rising far above high water mark, flooding the wharves, streets, &c. This is reported to have occurred on Jan. 9th; but we neglected to mention as we might have done,—for it had been published in the Star, —that Mr. Merriam, had noticed strong indications of a distant earthquake at about the same time. On the 25th ult. Mr. Meriam remarks: "My meteoric, magnetic, and electric wires, for the last twenty-four hours, denote an alarming state of atmosphere, indicating an extensive distant disturbance. The wires have marked 49 deg., and a state of equilibrium for twenty-four hours. The thermometer has vibrated but one degree during the same time"

A Volcano at Work.

The following is from the Coburg (U. C.) Star of Jan. 20th:—"We last week recorded a very wonderful convulsion of Lake Ontario. We have this week to mention one equally wonderful as having taken place in Rice Lake, 12 miles to the north of this town. Last Thursday (Jan. 14th) the lake was seen to be in great commotion, the ice, 18 inches thick, undulating in every direction. Presently it burst with a noise like thunder, and a large piece from the centre of the lake was, in a few minutes, thrown up in a pile to the height of ten feet, in which position it now lies. This is, no doubt, related to the earthquake which caused the awful commotion in Lake Ontario at Grafton."

On referring to Mr. Meriam's notes, we find the remark that, on the 14th, the day abovementioned, the magnetic wires indicated a long continued suspension of vitality in the atmosphere—an equilibrium of 12 hours.

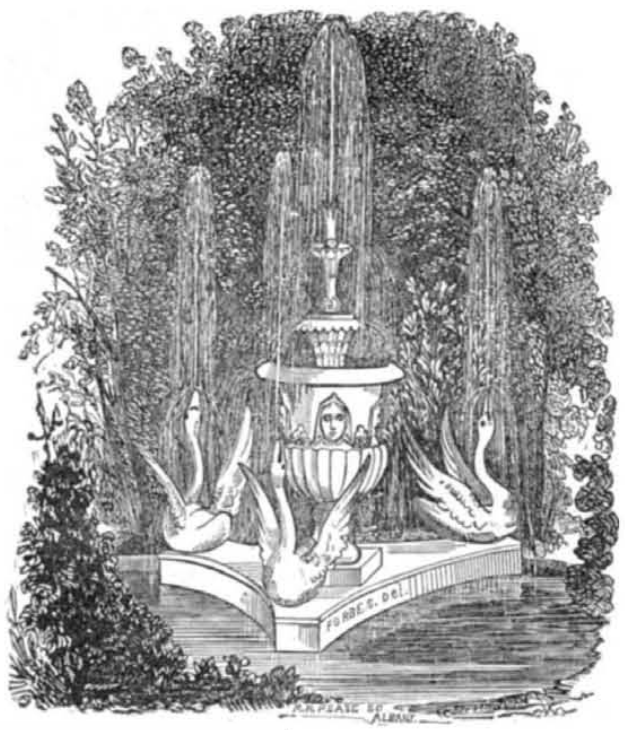
Since the above was written, Mr. Meriam has favored us with his meteorological observations up to Tuesday morning, from which we select the following:—"On Sunday morning, Feb. 7, at 9o'clock, there was a sudden rise in the thermometer of three degrees, with the wires in an *equilibrium* state, at 46, for the previous eleven hours. On Sunday evening, at 5 o'clock, the thermometer was at 31 and the wires at 48. From that hour till 1 o'clock, A. M., the thermometer ranged from 31 to 34, and the wires from 48 to 50, both returning to the position noted at 5 in the previous evening. The same state of atmosphere existed on the 28th of February, 1846, when the shock of an earthquake was felt at Cincinnati, Ohio, which was succeeded by a storm that traveled eight thousand miles, doing much damage.—At 9, on Monday evening, there was an earthquake depression of three degrees on the thermometer, and one and a half degrees on the wires—the wires remaining in *equilibrium* up to 30 minutes past 8 this morning, at 50 degrees, being 10 and a half hours, and still unmoves; the thermometer has been in *equilibrium* at 38, ten and a half hours and still continues. There was at 8 this morning a singular action in the high atmosphere which would favor the opinion that something swifter than the wind has been passing through the high regions of the air, and been thrown up from a high mountain elevation." E. M.

Feb. 9, 30 *minutes past* 8, *A. M.*

Mr. Merriam remarks that, on Wednesday of last week, he noticed an extraordinary state of the magnetic, electric and meeoric wires; the southwestern portion was greatly affected,—the long tin tube, pointed in its interior with copper, described a quarter circle, and the day following became vertical. The lower termination of the iron spindle being in water, resting in the earth, surmounted by a thick crust of ice; this wire connects by metallic points with the pores of a living cherry tree, and thus has another connection with the earth by the roots of the tree, and the atmosphere by its branches; while its companion, pointing to the northeast, is connected with the pores of dry wood planted deep in the earth, in addition to its other terrene, aqueous and aerial connections, and both of these unite in suspending in the atmosphere a large active load stone.

We have examined these wires which are at least a fourth of an inch in diameter; and it is truly astonishing that there is in the atmosphere a sufficient electric or magnetic influence to bend them in various directions from their ordinary position. We shall present further reports from these observations in future numbers.

THE SWAN FOUNTAIN.



There are a variety and diversity of tastes in different people, which diversity greatly contributes to the benefits of all trades which depend in any measure on fancy: but the pattern here presented of an ornamental fountain, represented as it is in the midst of green foliage, has been favored with an extraordinary share of approbation, not to say admiration.—Yet there are many who have an aversion to figures of animals in displaying the water, and prefer not only simplicity, but in some instances, the absence of all appearance of art, as if the fountain was formed by nature in the most rude, rough and shapeless masses of stone. A fountain of this description is displayed at the Bowling Green in this city, and appears well enough in that place: but a fountain embellished with fancy figures is preferred in more rural situations, and is in fact more in keeping with correct and refined taste.

RAILROAD INTELLIGENCE.

Hudson River Railroad.

In another column will be seen an address to the public on this subject, and which, in behalf of the public we insert, believing as we have before said, that this must be *the* great northern avenue to this city; and that with nothing short of the construction of this road ever can or will satisfy the demands of public convenience. We are gratified to learn that the subscriptions to this stock thus far, are liberal and encouraging.

The subscriptions in Sing Sing are about $50,000, and in Pougkeepsie $140,000. The entire subscriptions when last reported were about $2,000,000. The delay in commencing this road, by giving the commissioners time and opportunity to witness the advantages of the wide guage, will probably induce its adoption and thereby greatly enhance the eventual value of the road.

Baltimore and Ohio Railroad.

About thirty miles of this road have recently been completed with a new rail, 51 lbs. to the yard. The effects of this improvement are already manifested in the more early and regular arrival of the trains at both ends of the road, and they will be further felt in the reduction of expense in the maintainence of the road and machinery, and the increased safety and comfort of the travellers passing over the line. It has been the intention of the company to extend this road to Wheeling: but the President, Mr. McLane, in a recent letter, expresses doubt of the practicability of the route, and encourages its extension to Pittsburg.

Providence and Worcester Railroad

The work on this road is now progressing rapidly, and it is expected the road will be opened by the first of July next.

Kennebec Railroad.

The Yankee Blade says that the Portland & Kennebec railroad will be commenced early in the spring. In Augusta, Hallowell, Gardiner, Bath, &c. the amount of subscriptions is large. The friends of the Lewiston and Waterville road are equally wide awake, and would not thank John Jacob Astor to warrant that the road should "go." The subscriptions in Waterville have gone up to $90,000, and in Fairfield to $25,000, five per cent of which last amount has been deposited in the Ticonic Bank. More recent accounts state that the amount of subscriptions is nearly or quite up to the mark—$500,000.

Essex (Mass.) Railroad.

This branch was opened last week between Salem and Danverse, and passengers were carried gratis.

Peterboro (Mass.) Railroad.

The work of grading was commenced in Groton and Townsend, says the Bunker Hill Aurora, on Wednesday last, and will be prosecuted with vigor during the winter. This road, it is expected, will be got ready for the superstructure by the 16th of August next.

The Railroad from Burlington to Brandon, a distance of fifty miles, has been let out to contractors for $7,300 per mile, a sum far less than any one supposed it could be built for. The lowest estimate of the engineer who located the road was $14,500.

The Canada Railroad.

The railroad leading from Niagara river to Detroit, through Canada, is now about to commence in good earnest. Charles B. Stewart has been appointed chief engineer of location and survey; and will have the work prepared to put under contract early in the spring.—With reference to the construction of a bridge over the Niagara river, which we now regard as a settled matter, the earnest now given that the Canada road is to be built, may be looked upon as a fortunate event on both sides of the river.

Concord N. H. Railroad.

The Concord railroad company directors have voted to add $200,000 to their capital stock to complete the second track.

Fitchburg Railroad.

The annual meeting of the stockholders of this R. R. Co. was held in Boston on Monday.

The subjects of building a branch road to Stirling, 13 miles from Fitchburg, and of extending the road into Boston for a passenger depot, were referred to the decision of the Directors. On the Fresh Pond branch, 73,000 tons of ice have been brought to Charlestown during the present year. 814,743 pails and 327,110 chairs were brought from above Fitchburg, within the same time.

Burlington (Vt.) and Ogdensburg.

A distinguished and experienced Surveyor has been employed to find out the most advantageous railway route between Burlington and Ogdensburg; and it appears that after a competent survey, that gentleman has discovered and recommended a new and most favorable line. This line in leaving Burlington is to run along the south side of Lake Champlain until it reaches St. Albans—from thence through Hog Island and St. Albert, in a direct line to Rousse's Point, where every facility is found for the construction of a permanent bridge across the Richelieu; the line then pursues its course through a level tract of land a little to the south and parallel to the divisional line '45, passing through the thriving village of Malone, and from thence taking the direction up on the borders of the St. Lawrence to Ogdensburg.

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NEW INVENTIONS.

New Rotary Steam Engine.

We have received from the inventor, Mr. Russel Burton, of Annsville, N. Y., a drawing and description of a rotary steam engine of a novel and deeply scientific construction, and for which he has made due application for letters patent. We shall not attempt a full description until we procure an illustrative engraving which may be expected in a few days. The engine is so arranged as to derive power in the first instance from the momentum of the inducted steam, as well as its full force of pressure which is exerted on the piston. The steam is regularly cut off at half stroke or less from one piston, and applied to another piston while acting expansively on the first: and the arrangement for exhausting is such as to operate by re-action on the pistons. Both the induction and eduction of the steam, are through the main shaft, and arrangements are made for amply oiling the pistons and packing, when in operation. We see no reason why the invention should not succeed much better than the rotaries heretofore introduced, though it evidently requires excellent workmanship in its construction.

Improved Carriage Spring.

Mr. William S. Thomas, of Norwich, Ct., has furnished us with a drawing and description of an ingenious and apparently excellent improvement in springs for coaches and light carriages. This improvement is not calculated to come into competition with that of Mr. Snow, described in this paper two or three weeks since, but may be preferred on light fancy coaches, &c. The elliptic spring is in this retained, with addition of a longitudinal U spring with a peculiarly broad iron reach, constructed to accommodate the U springs, which are moreover to be occasionally supported by additional interior plates. The inventor is but an apprentice, or at least, a minor, and should be encouraged to persevere in advancing improvements, and with accumulated experience will probably be enabled to introduce improvements of greater magnitude.

Revolving Railroad Gripper.

Messrs. R. F. Stephens, and L. B. Pitcher, of Syracuse, have invented and secured a patent for an apparatus for increasing the traction of locomotives, on railroads. The invention consists principally of two endless chains which pass over the peripheries of the driving wheels, and a small pair of forward wheels, so that a part of each chain is constantly in contact with the rail. Every alternate link of each chain consists of two short parallel bars from which projections extend outward; and these projections being at a distance apart corresponding to the breadth of the rail, clasp the rail when they come in contact, in a manner to prevent the sliding of the wheels upon the rail. These projections are called *grippers*, and are connected to each other by pivots consisting of right and left screws; and each pair of screws is connected by a longitudinal strop of iron. When the grippers are passing over one of the small forward wheels, the curved position causes the grippers to expand, but they are drawn towards each other, and thus caused to grip the rail when the chain is straightened on the rail. We think this invention too complicated to be extensively adopted.

Marble Castings.

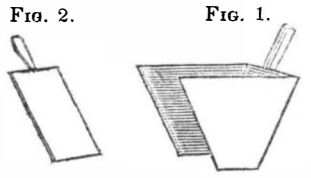
A composition has been invented in Prussia, which perfectly imitates marble, and which may be poured into moulds in a fluid state, for the making of casks, and other utensils. A manufactory has been erected at Charlottenburg. Statues may be cast of this material as easily as of plaster of Paris, and will be afforded at so cheap a rate that it will be in the power of persons of very moderate means to possess them. It is expected that this invention of marble castings will be applied to the building and ornamenting of houses. Moser & Kriegk, the inventors keep their method a secret, but admit that they obtain the material from Bohemia.

Iron and Coal.

A mile of railway, it is said, with a heavy track, requires *ninety* tons of iron, and each ton uses up at the foundry five tons of anthracite coal. What a sea of wealth is opening to the eye of the sons of Pennsylvania, in her iron and coal mines?

Stetson's Transplanter.

Fig. 2. Fig. 1.



This invention is of a class, the utility of which is apparent to the casual observer, and which must come into extensive use as soon as its existence is known to the farmers, gardeners and fruit-tree cultivators. The instrument which is represented in the cut, consists of a sort of spade with side cutters, to be pressed into the earth near the plant to be raised, when the blade, fig. 2, which is made to fit the wings, is forced down on the side opposite the spade, when the plant with the adjoining earth unbroken, may be raised, removed and planted in another cavity previously made by the same instrument. We hope the inventor, —Mr. Thos. D. Stetson, of Middleborough, Mass.—will lose no time in supplying the agricultural ware-houses with so indispensable an article.

Springfield, Vt. Jan. 25, 1847.

Mr. Editor.

I have recently made a new and valuable discovery in the mode of tempering steel, which consists in giving steel any degree of temper desired and no more, ie. the temper does not have to be drawn after hardening.—Some of the advantages of tempering in this way are, the steel will not *crack* or *spring* in tempering it; it also leaves the steel much tougher than when tempered in the ordinary way; therefore axes and all kinds of edge tools may be left much harder and less liable to break in using. Hay and manure forks tempered in this way will have double the strength —and as I before said will not spring out of shape in the least, or be in the least liable to crack in tempering. I put together side by side ten pieces of sheet steel and wound them with a wire and tempered them; the middle ones were as evenly and as perfectly tempered as though they had been immersed separately. The process is very simple, and any person at all acquainted with tempering steel will find it a much easier way than the ordinary way of hardening and drawing.

I wish to ascertain if you, or any of the readers of your valuable paper know of any process by which steel can be hardened as above described, as I contemplate applying for Letters Patent unless the art has been before discovered Very respectfully yours.

D. M. Smith.

We have full confidence in the statement above and think it must prove a very important discovery. We shall of course have the privilege of publishing a full description of the process as soon as the inventor shall have taken due measures for securing the right of the invention. We may take this occasion to remark that inventors of machines run no risk, but rather increase their security by publishing early notices of their inventions; but inventions of improved process of operation, like the one above mentioned are not equally safe until patents are granted therefor.—Ed

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To the Editor of the Scientific American.

Sir.—As your paper is the medium for communicating patent intelligence in this city, and as the editorial remarks published therein affecting the intetests of persons largely interested in a valuable patent might work an injury, though not intentional, permit me to call your attention to a communication—published in your paper a month or two ago, noticing a machine said to have been invented in New Haven, Conn. I have seen that machine; the description of it is as follows—It has a cross head reciprocating horizontally across the board, with knives attached, being the same thing, so far as invention goes, as the machine patented by Samuel Bentham, in England, in the year 1791, and described in the tenth volume of the Repository of arts—It is a mere application of an old invention cutting across instead of lengthwise of the board, which latter method was the application of Bentham. There can be no invention in this.

The side cutters are substantially Woodworth's—an attempt is made to evade Woodworth's patent by altering the rotation of the cutters.

In the Woodworth machine the knives rotate in the true circle, and in the New Haven machine the side cutters traverse in an eliptical or oval form describing the segment of a cylinder, and having the adjacent in the operation.

Permit me, then, Mr. Editor, through your journal to caution persons from interfering with a machine which may lead to much expense and difficulty.

(I have left my name with the editor who will communicate to any person interested.)

Planing Machine.

Remarks.—We insert the foregoing by request; but we have, nevertheless, no hesitation in giving our decided opinion that, admitting the statements to be correct concerning the old cross-cutting machine &c., there is nothing claimed in the new machine above alluded to, that can be in the least affected there by. We are against unreasonable and sweeping monopolies; and feeble indeed would be the encouragement to invention if the inventor of an improvement in—for instance—a horizontal waterwheel, should be deprived of his right in the invention, because, forsooth, a horizontal waterwheel, was known to have been in use before. We would encourage the inventor and proprietor of the new machine to *go ahead;* the invention will without doubt sustain a valid patent. If otherwise, the public will at least be entitled to more light on that particular subject, than has been hitherto disseminated.—Ed.

Discovery of Steam Power.

Among the highly valuable discoveries, we must place that of steam; for, by its means, distance is annihilated, trade rendered prosperous, human labor saved, and a new importance given to the country. It is a curious matter to follow the progress of this discovery, which is, in a great measure, due to the children of beautiful France.

Anthemius, an architect and engineer, under the Emperor Justinian, mentioned by Agathias, in his history, book iv., having lost a law-suit against his neighbor Tenon, resolved upon a singular species of revenge. He filled several large vessels with water, and closed them very tight; several pipes were attached to the covers, which decreased in size as they reached upwards. Fire being placed underneath, the steam escaped through the pipes in the covers, and not finding a free vent above, shook the ceiling and the rafters of his own house and that of Tenon to such a degree that the latter left it from fright.

The power of steam was then known at that time; but the application of it, for want of means, was never directed to useful purposes. Nevertheless, in an article of M. Arago, in the *Annuaire des Bureaux des Longitudes*, for the year 1829, we read that, one hundred and twenty years before Christ, Hero, of Alexandria, called the Old, invented an apparatus presenting the first application ever made of steam. It bore the name of *spiritalia seu pneumatica*, and is called a reaction machine.

Under the reign of Louis XIII., a man conceived the project of making use of steam, as a motive power, on an extended scale; but his genius experienced an oppression of a terrible nature. If Cardinal Richelieu is mentioned in history as a capable minister, we must not yet forget that there were many victims to his pride and obstinacy, whose sufferings have tarnished his reputation for skill, and shed a bloody halo round his head.

The following is a letter addressed by Marion Delorme to Cinq. Mars, the young man who entertained the silly project of overturning the cardinal minister:—

My dear D'Effiat:—Whilst you are forgetting me, at Marbonne, absorbed in the pleasures of the court, and of opposing M. le Cardinal, I, according to your expressed wishes, am doing the honors of Paris to your English lord, the Marquis of Worcester. I take him about, or rather he takes me about from one curiosity to another. Choosing always the most sad and serious, speaking but few words, listening with great attention, and fixing his large blue eyes upon every one of whom he asks a question, as if he could see into the depths of their souls. He is never satisfied with the explanations he receives, and does not look upon things exactly as they are shown to him. For instance, when we visited the Bicetre, he pretended to see marks of great genius in a crazy man, whom, if he were not raving, I am sure your Englishman would have taken to London if possible, and listened to his nonsense from morning till night. As we crossed the yard filled with these creatures, I was half dead with fright, and leaned against my companion. Suddenly an ugly face appeared behind the bars, and a hoarse voice exclaimed:—

"I am not crazy. I have made a discovery which will enrich the country that so violently opposes it."

"What is his discovery?" I asked the man who showed us over the place.

"Ah!" exclaimed he, shrugging his shoulders, "something very simple, which you would never guess—it is the use of steam."

I burst out laughing.

"His name," continued the keeper, "is Solomon de Caus. He came from Normandy, four years ago, to present a memoir to the king on the subject of the marvellous effects to be obtained by his invention; according to him, machinery could be moved by it, carriages propelled, and numerous other wonders produced. . . . . The cardinal sent away the fool without listening to him. But de Caus, undiscouraged, followed him from place to place, so that Richelieu, tired of him, had him shut up in the Bicetre, where he has now been three years and a half, and where he tells every stranger, as he did you, that he is not crazy, but that he has made a great discovery. He has even written a book on the subject."

And he handed us a book. Milord Worcester took it, and after reading some pages, said:

"This man is by no means crazy; and in my country, instead of shutting him up, he would have made his fortune. Bring him here—I wish to question him."

He returned from his conversation with a sad countenance.

"He is indeed crazy now," said he, "misfortune and captivity have destroyed his reason for ever; you have made him crazy; but when you put him in this dungeon, you placed there the greatest genius of your time."

Hereupon we took our leave, and since then he can only talk of Solomon de Caus. Adieu, my dear and faithful Henry; come back soon, and in the meantime be not too happy there, to preserve a little love for me.

Marion Delorme.

The book shown by the keeper to the Marquis of Worcester, was, no doubt, that published by the unhappy Solomon de Caus, in 1613, by the title of *Considerations of Motive Forces with various Useful Machines.*

The idea of raising water by means of the elastic force of steam, belongs then to Solomon de Caus. Forty-eight years later, the Marquis of Worcester endeavored to appropriate it to himself.

Side by side with the name of De Caus, stands that of Papin, the first who constructed a machine in which steam, under a high pressure, raised itself into the air after producing the desired effect. The atmospheric machine of the Englishman, Thomas Newcomen, with the exception of a few trifling particulars, is precisely the same.

The inventor of the steam engine with pistons, Papin, was the first man who perceived that steam furnished a simple means of creating a vacuum. He was also the first who thought of combining the action of steam with its powers of condensation.

He also proposed steam as a means of propelling vessels forty-two years before Jonathan Hull, whom the English consider as the inventor.

A Good Night's Business.

Some time since, Mr. Woodbridge, agent for Day, Newell & Day, patent safe manufacturers, placed in the Exchange a safe, with a recently invented lock, and in the safe enclosed $500, as a reward for any person who should pick the lock. Mr. Hobbs, locksmith of this city, was shut up one night in the building, and at 7 A. M., left $500 richer than when he entered.

"Money makes the man." Perhaps it does: but *Punch* thinks it particularly necessary that man should make the money first.

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NEW YORK, FEBRUARY 13, 1847.

The Effects of the Introduction of Mechanical Improvements.

It is not uncommon to hear people speak against new inventions in general terms, thus advocating the policy of restricting the community to the present facilities and conveniences, or rather of retrograding to a state of barbarism, as many nations have done before.—We are not disposed to express our opinions of the intellectual condition of those who uniformly discourage and oppose the advance of improvements either moral or scientific.—Some contend openly that the introduction of labor saving improvements in machinery is a disadvantage to the community at large, inasmuch as it diminishes the demand for labor, and consequently deprives many laborers of employment; but we shall endeavor to show the fallacy of this position, in a manner too plain to be misunderstood. We would first remark, however, that if this point is conceded, it will go directly to prove and establish the propriety of abandoning at least gradually, the various labor-saving mechanical inventions which are now in use.

Supppose, for instance, that we discard the *printing press* and apparatus, (suppressing of course, at the same time, the importation of foreign prints,) what an immense demand would immediately be produced for scribes and copyists; or if we discard carriage wheels, how many thousands of porters would be required for the conveyance of produce and merchandise. This course would not only give employment to many more people than are now required, but the price of this kind of labor, would be greatly enhanced. Horses, also, and other beasts of burthen would be in great demand, and command vastly higher prices than at present; moreover, provisions would become so exceedingly cheap in the country, that a laborer or carrier might probably obtain five times as much for a day's work as he can under our present system of facilities. But the effect that this measure would have on the interest of the farmers and the merchants, is another consideration. We might enlarge on this part of our subject by supposing the plough also, and the loom, and even the axe and other tools to be discarded; but we think it needless, presuming that no one will be disposed seriously to advocate the policy of such a course. But as our facilities are considered to be now in a state bordering on perfection, why should we be constantly striving to improve them? especially, considering that many mechanics and laborers often find it difficult to obtain employment. To this we answer, that the general effects of the introduction of mechanical improvements, is diametrically opposite to that which this question supposes; and in support of this position we shall offer a few incontrovertible illustrations, commencing with what is termed cotton machinery.

The *Gin* for loosening cotton and separating the seeds therefrom, will, with the attendance of one man, accomplish as much work as ten men could perform without it. Then the picker, the spinner and the loom, together with the various machinery for calico printing, which altogether will accomplish more than one hundred times as much work as could be done by an equal number of hands without them. Yet, in consequence of the introduction of these improvements, there are ten times as many people employed in raising cotton, and in the manufacture of cotton fabrics, as would have been without them. We will next consider the manufacture of clocks—an article which had been manufactured for centuries before Mr. Terry introduced improved mechanical facilities for this purpose. This was about twenty years ago, and as a direct consequence, the price of brass clocks has been reduced from $60 to $3: and there are at the present time, at least five times as many persons employed in the manufacture of clocks, as would have been if these facilities had not been introduced. The reason is obvious: the price being greatly reduced—many thousands of people have bought them, who would not have thought of paying the former prices.—We will notice one more instance—that of the improved facilities for building. We now have saw mills, brick machines, and a great variety of carpenters' tools; besides wheel carriages on which to haul the materials together. Will any one contend that a greater number of people would have been employed in the building business, without these facilities than we now have employed. We think not: the point is conceded.

Much opposition has been manifested in various parts of this country, to the introduction of railroads, on the plea that it would reduce the demand for horse labor, and injure the business of the waggoners. But results have proved, at least in most cases, that wherever railroads have been constructed, a variety of new and profitable avenues of transportation, or the carrying business, have been opened, which were not before available. And thus will ever be the case, that the invention and introduction of labor-saving improvements, instead of reducing the demand for labor, will, by opening new avenues of trade, and new inducements of enterprise, tend to increase the demand for, and enhance the value of the laboring classes.

The Two Railroad Projects Compared.

It is well known that Mr. Whitney has promulgated a grand scheme for a Railroad across the United States, to connect the Atlantic with the Pacific ocean. It is also known that Lieut. Wilkes has published and is urging a scheme of a similar character. Between these two projects the public mind is, and probably will be for some time divided. And yet few are familiar with the comparative merits of either. To enlighten our readers on this important subject, we givea succinct statement of the nature of each proposition.

Whitney proposes: 1st. To construct the road himself, and to start from the lower point of Lake Michigan, on the eastern border of Illinois. 2d. He asks the government to give him a stretch of the Public Domain 60 miles in width, from that point to the Pacific Ocean, which he agrees to sell to obtain the means to build the road. 3d. The road to belong to him and his associates for the first 20 years after its completion, and afterwards to the government, unless his associates or their successors shall then conclude to pay the Government 16 cents the acre for the granted land.

Wilkes proposes, on the other hand: 1st.—That the work be national, and that it be built and owned by the government. 2d. That its construction and control be confided to sworn Commissioners selected by the State Legislatures, or by the people of the several States.—3d. That it start from the Missouri river, and run thence westwardly over the territories of the General Government. 4th. That its revenues and tolls be kept down to the measure of its current expenses. 5th. That it be open to foreigners and their merchandize on the same terms as to our own citizens, with the exception of mere debenture fees on foreign freight. 6th. That it be built out of the Public Treasury, and that no special allotment of the contiguous Public Lands be made, except in favor of the laborers and mechanics on the road—it being recommended that each man who has worked *one year* upon it, receive, in addition to his usual wages, a reward of 80 or 100 acres as a farm to settle on.

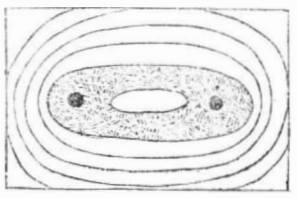
These are the two plans. They are both for the second time before the Congress of the nation, and the people can take their choice between them.

Ranlet's Architect.

No. 5 of this splendid publication is received and is quite equal to the previous numbers; and higher praise than this is difficult to express. It has many plates in the most perfect style, with a variety of the most valuable instructions for carpenters and builders. In short, it is just such a work as no respectable master carpenter can, without much inconveniences, do without Published by W. H. Graham, Tribune Buildings.

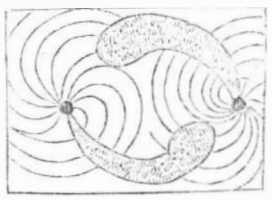
Curious Electro-Magnetic Phenomena.

Fig 1.



Place an electro magnet in a vertical position with the poles upward, and place a hard plate of copper in a horizontal position, resting on the two poles of the magnet. Form a border of wax round on the edges of the plate, and pour on the upper surface a small quantity of a strong solution of nitrate of silver. Let the battery connected with the magnet be put in full action, and have the apparatus in that position for twelve hours. Wash off the deposite of silver, and the plate will be found deeply etched as represented in the cut fig. 1; an oval including the place of the two poles of the magnet, being deeply indented with small irregular figures, while a small oval space between the poles is left bright; and beyond this the copper will have been cut in oval lines at different distances from the magnetic poles.

Fig. 2.



Place a plate of glass upon the poles of the magnet,—the edge of the glass being furnished with a wax border,—and pour upon the glass a mixture of a weak solution of nitrate of silver and of sulphate of iron. In a few minutes a precipitate of silver will commence arranging itself in curves proceeding from and around the poles; and soon after two curious curved spaces will be formed by the fine deposite, proceeding from each pole towards the other, in opposite directions, increasing in width as they proceed, till abruptly checked at a little distance from the poles towards which they are directed, as represented in fig. 2. These experiments show that magnetism exerts a powerful influence in molecular arrangements, and that it regulates the direction of crystaline formations.

The Western Telegraph Company.

Various rumors being in circulation respecting the formation of a company, or of companies, to connect this city with Washington, Baltimore, Philadelphia, New York, Boston, &c., via Wheeling and Pittsburg, and with New-Orleans and St. Louis, via Louisville, the position of the undersigned renders it proper for him to state such facts in regard to the extension of the telegraph line as are of immediate interest to the people of the Mississippi Valley.

He has obtained a legal transfer from the patentees of their right to construct a line or lines of magnetic telegraph, connecting the cities of Washington, Baltimore and Philadelphia westward with Harrisburg, Pittsburg, Cumberland, Wheeling, via Columbus to Cincinnati, Louisville, Nashville, &c., to New Orleans and from Louisville to St Louis, and from Columbus to Cleaveland.

He is authorized to form a company (and will proceed to do immediately) to be known as "The Western Telegraph Company," for the purpose of raising the necessary funds to connect the above named places, and all intermediate points of sufficient importance to require an office. The cost of construction, including batteries, and all things necessary for working Morse's Electro Magnetic Telegraph, is not to exceed $125 per mile for one wire, and $35 per mile for each additional wire.—The whole distance will fall short of two thousand miles, and consequently the entire cost will be less than $250,000—a very small sum for such an important work.

A line of telegraph is already built and in operation from Philadelphia to Pittsburg, and provision is made in my articles of agreement with the patentees to allow the stockholders, by subscribing their names to the articles of agreement of The Western Telegraph Company to become stockholders in it, upon the same terms and conditions of original subscribers.—The patentees contend (and I have no doubt correctly) that the line from Pittsburg to Philadelphia has been built in violation of their rights, and without their authority; and hence it will be treated by them, and those acting under their legal authority, as spurious, unless the stockholders become absorbed in The Western Telegraph Company, and till they do become so absorbed.

My agreement with the patentees stipulates for the completion of the contemplated work within two years from the first of January, 1847; but if no unforseen obstacles should present themselves, it is my intention to have it done at a much earlier day.

As soon as a proper organization is made persons duly authorized to act will visit the different cities and towns upon the proposed lines, to solicit their friendly co-operation in raising a share of the necessary funds. Pittsburgh, New Orleans, and St Louis being three of the most important points, and most deeply interested, will not, it is presumed, be a whit behind Cincinnati in the substantial promotion of this great work.

The interruptions on the eastern lines will be avoided on this line, by using iron wire instead of copper, and of three times the size, and nine times the strength, and by using great care in the insulation.

In fact, the frail copper wire used upon the eastern lines when first constructed, is now being replaced by a substantial iron cord, or wire, of sufficient strength to resist the storms, and especially the ice, that have heretofore broken it to pieces, and interrupted communication.

The productiveness of capital invested in important lines of telegraph, and their great public utility, are now no longer debatable questions; and it will be but a brief period before communications will pass with the speed of lightning over and through the whole extent of our vast territory, from north to south, from east to west, cementing more and more strongly the bonds of union, and holding aloft, with firmer nerves and stronger grip, the star spangled banner, the glory of American freemen, and the admiration of millions throughout the world. Eliphalet Case, Jr.

Cincinnati Gazette.

Wind of a Ball.

In the engagement between the British and American fleets on Lake Champlain, in 1814, a circumstance attended the death of Captain Downie, a British officer, well deserving record: While Captain Downie was animating his men, a large shot passed close to him, and he instantly fell dead; he gave not the smallest sign of life after the shot passed him, and upon examining his body no visible injury had been sustained. I cannot believe that the concussion of the atmosphere could have produced the above extraordinary effect; and trust that some of your ingenious correspondents will not think the inquiry unworthy of their attention.—*Mech. Jour.*

It is rational to suppose that the vital action was paralized by the shock of terror under the instantaneous apprehension that he was actually hit and decapitated by the ball. —Ed. Sci. Am.

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FOREIGN CORRESPONDENCE.

No. V.

Europe and America—A Glance at them.

LONDON, Dec. 27, 1846.

My dear Sci.—

While I am astonished at the statistical immensity of London and England, I am proud to believe that America, by which I mean the United States, is destined to outstrip this "master empire" of the Old World. Very many foreigners, whose intercourse with geography and history is limited, imagine our country to be a wilderness somewhere across the ocean, they don't know exactly where; and our people, a race of mixed Europeans and savages, of which medley the savage is uppermost. It is not altogether an exaggeration, the anecdote of the Englishman asking an American what tribe he belonged to, for very similar questions, or remarks that are questions indirect, have been repeatedly uttered in my hearing. The stories about our high mountains, long rivers, great lakes, terrible falls, and immense thunder and lightning, when told considerably *short* of the truth, are received with incredulity, and as most Europeans have had caricature speeches of our orators to mould an estimate of our truthfulness upon, they set the stories and speeches down together, and call the whole bombast. The mass of Englishmen firmly believe that the British Isles are the most extensive country on the globe, both in the matter of square miles and population. You may tell them what is a fact, that the State of New York is larger than England. and that the coal and iron mines of Pennsylvania will, when fully developed, swallow all the mineral wealth of England, Scotland Ireland and Wales, and they will laugh at you.—The River Thames in the Londoner's eye, is the Amazon of the world, while to me it seems what it really is, a contemptible mudbrook compared with either your Hudson or Ohio, or that father of waters, the Mississippi. For her space, and the influence that goes out from what is crowded into that space, England unquestionably is, the first and most powerful of nations. But when you come to look at her comparatively, measuring her sphere by the ages that have drawn the circle, she dwindles behind the shadow of the Republic. We are, after about seventy years of national existence possessed of a population of twenty millions; Britain proper can boast of only thirty millions at most, and she has had eight hundred years since the Norman conquest, with some twelve hundred before that, since the Roman invasion, to produce them, and make her what she now is. The mass of people seem never to take into account our youth, the beggarship that was our heritage, or in fact it was worse than beggarship, for after being forced out of doors, we had no resort but the wilderness and our faith in God—nor do they credit us with the continuous obstacles that have imposed themselves against our growth, but though imposing were never able to pluck us up by the roots. They think because they find themselves after centuries of rubbing, polished and perfect, that we too, like another Minerva from the head of Jove, should stand sprung in complete panoply. Let them go back to the time of Richard the first only, when Gurth with his collar on his neck was the born thrall of Cedric the Saxon, and Cedric himself but a slave to the Norman, and then contrast themselves with us. Nay, but they need not go back at all. I conceive that we can afford them half a dozen centuries and then measure ourselves by them without disadvantage or cause of shame. We are as a people unquestionably somewhat crooked, knotty and rude; but remember our birth was on the mountain side, where, like a young oak, we have grown against the fury of the waters, the rush of the storm and all the asperities of nature, and though a little jagged about the trunk, and gnarled at the root, our limbs begin to show smoothness, our sap is full of vigor, and our leaves are fresh as the mountain air. Our birth, for ourselves and the world, was fortunate instead of calamitous, but the Old World has no thanks for that, and there is none the less reason why she should not allow for what *might* have been the results under such circumstances as ours, when she is judging us. I said our heritage of beggarship—I meant not that; beggarship was rather our condition; but we had a heritage of determination, faith and freedom, in the very spirit that led us into the wilderness, rather than bow down any longer in the land of our fathers.—I am inclined to think that there was something Godly in the course marked before us, that the cloud and pillar of fire were prepared for a crisis in human conditions, and we went forth as pioneer pilgrims to announce the advent. I never think of the word pilgrim without feeling a thrill over all my nerves. There is a Mecca, and there are heroes, prophets, and martyrs for all nations, they could hardly be nations without such; but I am so selfish as to believe we have the grandest of all these. What does not the world owe to those inimitable spirits who dared the autumn perils of the ocean, and the wintry wilderness, to plant a seed, whose stalk promises to choke the tyrants and tyrannies of the earth. Who lifted up their hearts on the barren rock, and sent their psalm of deliverance and thanksgiving through the frosted air to the Great Father, and without halting or turning, laid the base of a new empire, whose spirit and genius are found equal to the task. The pilgrims, especially and essentially were the founders of the Republic. Bands of adventurers to other and more golden points had preceded them—their vision filled with ingots and their hearts with schemes of plunder—men who aimed at the subjection rather than the settling of the country, and who paused only where glittering gold allured them.—But the pilgrims came not on such a quest to the New World. They saw danger, suffering and death before them, but rather than stoop to their bonds at home, or tarry to be hunted to death whenever conscience dared to speak out, they resolved to seek even the extremest rigors of nature, where perchance, their spirit might take root and flourish, and have abundant fruit. God blessed their faith, and amid all their trials suffered no enemy to disperse them, until from Plymouth, they have spread over a continent, and with their spirit compassed the world. We can console ourselves, and bear with all the shafts of ignorance or malice; can afford to be dwindled in the geographical comprehension of Europe, while our example is shaking the most venerable thrones, and sifting oppressions to the wind. While the Republic is groaning and crackling with its huge stormy growth, like a young giant whose limbs refuse to be fully garmented in their rapid stretch, we can abide the charge of abortion and imbecility. "New lairds make new laws," and new empires, in ages that forego all the precedents of the past, can scarcely be comprehended by the genius of their rise, which from time to time halts to gratify its own ecstacy and astonishment, ere it provides for their fullest want. Our States, institutions, and habits of action and thought, can be governed by no old established rule. We present a phase without parallel—like elements sufficient for a world rolled up in hurry and confusion, and we need time to set bounds to the waters, the firm earth, and the sky, and to say to *our* universe "let there be light." Indeed, where are the bounds of our waters, and firm earth—where the horizon of a sky we have spread out to canopy the natives? No Gulf of Mexico, no Rocky Mountains, nor sea-surf lashing its coast can girdle the genius of the Republic. She may not plant her stars and stripes beyond those natural empire limits, but their light and cheer will irradiate like the sun, far beyond her empire-bound, and she will demand change of provision, with change of condition, until there comes a period of wane. Europe boasts of settled policies of government, because she has her growth as she conceives, and determining in her courts to stand conservative by her oppressions, she may present a picture of calm and order, such as we know nothing of. But we have no axiom but circumstances, and having commenced by experiment, are ready to go on experimenting until the science of the Republic is fixed and complete, which can only be, when human progress ceases. From savage to enlightened conditions, nations have passed their transition eras in apparent tumult and disorder, just as the mingling chemicals in the cauldron glow, hiss and fuse, before the pure elixir comes forth. Calm and order can necessarily form but little of our appearance for an age to come. Even with our actual advance, so far as the common good of men is concerned—beyond all other people, we are still in chrysalis; our shell of to-day answers not for to-morrow, our partial laws framed under the direction of partial light, must shift, expand, and at times altogether change, and yet be just and true for the days and years, and conditions of society that formed them. Mankind is a problem to be solved by nothing but exigencies. There can be invented no ready-reckoner, no sliding-scale to meet the wants of a nation like ours, in such an age as this. The judgment of the Old World upon our movements and motives. is formed from a point of view that shuts out most of the real causes of our action, and misapprehends the genius of our spirit. They, educated as they have been, surrounded and circumstanced as they are, and feeling as is natural they should do, are flippant in plans and suggestions for our good. We might in many respects just as well have an adviser from the moon. We form our estimate of government, institutions, and society, from an entire different theory of ideas.—We move in the light of another era from theirs, and are often intellectually and physiologically, at antipodes with them. We contemplate an issue entirely different from what their position allows them to conceive. They stand upon their fancied basis of enjoyment, we are in earnest, toiling progress, afflicted and likely to be for ages, with the external conditions to which we owe our peculiarities Not afflicted, though some might deem the work of transforming the wilderness, cementing the extremes of society, and harmonising varieties of habits and wants, an affliction—I look upon all this as the lever and propelling power of our destiny. This, has made us bold, hardy, generous and charitable, and taught us as we sprang from an oppression, not to be over fast in oppressing ourselves. This has given us faith in nature, God, and humanity, while it taught us, and teaches the world around us, not to "put its trust in princes." We have rejected the creed of "divine right of kings" or hierarchs, and all their theories of infallibility in human government. We believe that God governs the morals of men by their measure of conscience, and we govern ourselves by the measure of circumstances.—These will change, and the hopeful must believe grow better and brighter as society progresses, and as every thing in nature shifts its coating from period to period, to suit enlarged size and capacities, so shall we keep pace with our empire, in civil, institutional, and social provision. We boast not of the polish that flows from time and experience, and happily we are free from some of their castes and oppressions! We have not the appliances that answer to the wealth of the old world, nor have we its cursed extremes of condition. We receive the exiles and paupers of the earth, sympathise with and feed them, and for all of their misdeeds, are judged as though we were a nation of one tongue and family born. But we may console ourselves as I have said, while our arts and arms, our science and commerce are so visibly covering the earth. Our ships that tempt the icebergs, the tropics; that lie in every port, and proudly answer for us even in London, are alone an argument for our progress and strength. S. D. C.

Railroad to Albany.

The undersigned respectfully caution their fellow citizens against being influenced or misled by the anonymous attacks which are made in some of the public papers, and in the New York Herald particularly, on the features and merits of the proposed Hudson River Railroad, as placed before the public under the responsibility of the signatures of the Commissioners for receiving subscriptions to the stock. They reiterate for themselves and for their absent associates all they have said in regard to this enterprise in their address under date 5th ultimo.

As to the estimates for the cost of construction, the perfect practicability of the route in every respect, its incomparable superiority over any other line, its fitness for performing the business of such a thoroughfare of freight and travel, and the speed, safety, and cheapness of transportation upon it, they view all the objections that have been suggested as incorrect, unfounded or frivolous.

In regard to the profitableness of the road at the rates of freight and passage proposed, and the enormous business that would pass upon it, they can say that every fact in relation to the subject which has come to their knowledge since their last publication has only strengthened the opinions then expressed. Scarcely a day passes, but they are assured from persons of the best information on the subject, that the estimates of the business made heretofore by the Commissioners are entirely too low.

As to the necessity of the work, their conviction is as strong as ever. They sincerely believe that every other dependence is fallacious, to secure such a communication with Albany as the importance of the route demands and the wants of the city imperatively require.

If the articles alluded to were put forth under respectable names, the Commissioners or some of them would have undertaken to refute them in detail, to the satisfaction of every unprejudiced mind. As presented they do not know whether they are to be regarded as mere stock-jobbing communications—or whether they are put forth by advocates of the Harlem Company with any sincerity or confidence in their success.

Could this enteprise have been permitted to be brought before the public without opposition or misrepresentations of its features, their is no doubt but the subscription would long since have been filled to overflowing. The case of the road to New Haven justifies this remark—a route presenting the same difficulty which is urged as the main objection to the Hudson River Railroad, first rate steamboat competition, and that continued through the whole year—and competing for an amount of travel not one-fifth, perhaps not one tenth of the Hudson travel.

The commissioners again express their firm belief that if the subscription to the stock of this road should fail, it would be a great calamity to the city. Let not the importance of this great public work be obscured in the minds of any by the hope, that without their efforts, some available substitute will be provided in course of time. There is no substitute for it. The piece of road constructed by the Harlem Company, taking into view the character of the route and structure, is not worth considering for the great object in view. This road may be connected with the Housatonic, or with the Boston and Albany at Chatham, but in either case it subjects the intercourse of New York with Albany to the control of a Board of Directors sagaciously fostering the commercial interests of a rival mart, and the result of such reliance may be estimated by the tribute now exacted from New York on the transit of goods by the Housatonic road, on which $6 per ton is charged as the lowest class to New York, while only $4 is charged over a more expensive route to Boston,—and it is within the knowledge of the Commissioners, that fresh pork is conveyed tardily to New York at $9 per ton, while the same is taken to Boston for $4 per ton.

But from former experience let not the community rely on the Harlem Company for a railroad to Albany. The subjoined extract from a public document shows the danger of such reliance. The Eastern traffic is the only natural source of business for that road,

JOHN B. JERVIS, STEPHEN ALLEN,
SAUL ALLEY, J. BOORMAN,
JAMES HOOKER, W. CHAMBERLAIN
ROBERT KELLY, JAMES. N. WELLS.

What does it mean?

We find the following in a recent number of the Cleaveland *Plain Dealer*, but such *plain dealing* as this, is beyond our comprehension without some explanation.

SMITH CANNONIZED.—At a recent convention of the D. H. C's. E. Herring Smith, the great Wisconsin bard, was cannonized under the name of St. Herring; and hereafter his name will illuminate the calendar forever making the 21st of August as the memorable St. Herring's day.

Safety of Railroads.

Those who take ordinary care of themselves and are prudent, it is proved by the calculations of experience in England, stand only *one chance out of half a million* of meeting with any injury.

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TO CORRESPONDENTS.

"J. W. R. of B."—We have examined the drawing and description of your letter printing telegraph and have no hesitation in saying that it will, or may be made to operate and answer the purpose intended : but whether it will compete with those of Mr. House and others, we could not presume to decide.—Moreover we would not advise you to depend in the least on our opinion on the subject, since you are aware that we are directly interested in a favorite plan for the same purpose, and endeavoring to go ahead of all the world in rapid talking at long distances.

" T D. S. of M."—Your plan of a paddle is very ingenious, but unfortunately not new.—We saw in this city a mill—a tide mill,—in operation by a wheel of the same construction fifteen years ago ; and since that time it has frequently been proposed as a paddle wheel, though we have no certain knowledge that it has ever been put in operation for that purpose. The principal objections to this parallel paddle wheel is the liability of the crank machinery to be damaged by objects floating on the water.

"E. B. of B."—Your mathematical calculation illustrated with diagram, is correct as far as it goes ; but the greatest difficulty consists in the motion of the earth on its axis, and in its orbit : whereupon it becomes necessary to specify the latitude, longitude, month, day and hour of day. To find a perfect solution would be more tedious than useful.

"E. S. of L."—Please consult your own convenience with regard to time. We shall endeavor to be "on hand" at short notice.

"A. S. of M."—Varnish the periphery of your buff wheel with a heavy coat of good copal varnish, and when it is nearly hard but yet adhesive, cover it entirely with emery ;—pressing it down hard with a piece of leather or cloth ; let it remain till firmly dry and the emery will adhere, and will not be affected by damp weather. We would remind you, however, that your post-master neglected to mark your letter "paid," and we hope you will blow him up about it ; for we cannot afford to pay postage on letters of inquiry in addition to answering them.

"L. A. of A." You can be furnished with specification, drawings, and (if required) a model of your improved churn without the trouble of coming to this city. We can send the specification and application by mail for you to sign and return ; and the patent may be procured without your leaving your place. The expense, exclusive of model and patent fee will not exceed ten dollars. We know of no such machine in this city, as you mention ; and with regard to stoves, the different *best* kinds are so multifarious that we cannot keep the run of them.

"F. J. M. of E."—We find no such notice in No. 14, and of course do not understand the subject of your enquiries.

" A. P. of Lee, Me."—Your request will be complied with as soon as we receive that receipt

Indians in Mexico.

The Apaches, Camanches, and othe savages continue their inroads in the States of Durango and Chihuahua, laying waste the ranchos and haciendas, killing the men, and carrying off the women and children prisoners. The Mexican editors insist that the savages are led by American officers. It will be remembered that it was constantly reported during our last war with England, that the Indians were led on bythe British. One report is probably as true as the other.

The Oyster Mail.

Oysters are frequently forwarded from Baltimore to Wheeling, Va., a distance of nearly four hundred miles, by the mail coaches, and are spoken of as being received by mail.—Some wag supposes them to be advertised by the Wheeling dealers as "shell-fish of the *latest dates*."

Those editors who are too stiff and independent to copy anything from other papers, seldom furnish any thing worth reading in their own.

100 lots of 150 acres of land for so many farms in Western Virginia have been engaged for a company of Welsh settlers who are to locate thereon next spring.

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☞ This paper circulates in every State in the Union, and is seen principally by mechanics and manufacturers. Hence it may be considered the best medium of advertising, for those who import or manufacture machinery, mechanics tools, or such wares and materials as are generally used by those classes. The few advertisements in this paper are regarded with much more attention than those in closely printed dailies.

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☞ We would inform those who are desirous of procuring **MECHANICAL AND SCIENTIFIC BOOKS,** that we have made arrangements whereby we can furnish almost any work, at the lowest prices. We have Scribner's Mechanic, and Scholfield's Geometry, constantly on hand.

Price of Scribner's Mechanic, tuck & gilt edge $1,50
" " plain, bound in leather, $1,12
" of Scholfield's Geometry (per vol.) $1,50

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WILL prepare the necessary Drawings and Papers for applicants for Patents, and transact all other business in the line of his profession at the Patent Office. He can be consulted on all questions relating to the Patent Laws and decisions in the United States or Europe. Persons at a distance desirous of having examinations made at the Patent Office, prior to making application for a patent, may forward (post paid, enclosing a fee of five dollars) a clear statement of their case, when immediate attention will be given to it, and all the information that could be obtained by a visit of the applicant in person, promptly communicated. All letters on business must be post paid, and contain a suitable fee, where a written opinion is required.

Office on F street opposite Patent Office.

He has the honor of referring, by permission, to—Hon. Edmund Burke, Com. of Patents ; Hon. H. L Ellsworth, late do ; H. Knowles, Machinist, Patent Office ; Judge Cranch, Washington, D. C. ; Hon. R. Choate, Mass., U. S. Senate ; Hon. W. Allen, Ohio, do; Hon. J. B. Bowlin, M. C. Missouri , Hon. Willis Hall, New York ; Hon. Robert Smith, M. C. Illinois ; Hon. S. Breese, U. S. Senate ; Hon. J. H. Relfe, M. C. Missouri ; Capt. H. M. Shreve, Missouri. j23

ELECTRICITY.

SMITH'S CELEBRATED TORPEDO, OR VIBRATING ELECTRO MAGNETIC MACHINE —This instrument differs from those in ordinary use, by having a third connection with the battery, rendering them much more powerful and beneficial. As a curious Electrical Machine, they should be in the possession of every one, while their wonderful efficacy as a medical agent, renders them invaluable. They are used with extraordinary success, for the following maladies.

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These machines are perfectly simple and conveniently managed. The whole apparatus is contained in a little box 8 inches long, by 4 wide and deep. They may be easily sent to any part of the United States. To be had at the office of the Scientiffic Americcan, 128 Fulton st, 2nd floor, (Sun building) where they may be seen IN OPERATION, at all times of the day and evening. 2

BLACK LEAD POTS.—The subscriber offers for sale in lots to suit purchasers, a superior article of BLACK LEAD POTS, that can be used without annealing. The price is low, and founders are requested to make a trial.

SAMUEL C. HILLS,
j2 3m Patent Agent, 12 Platt street.

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All of which are bound in cheap form, expressly to send by mail, at the present low rate of postage, at the prices affixed to each work. Our friends at a distance may now enclose the money for either of the following works, and receive them by the return of the first mail.

Phrenology Proved, Illustrated and Applied : 35th edition, enlarged. By O. S. Fowler. Containing over 500 pages 12mo. Illustrated by upwards of 40 engravings. A practical standard work on the Science. Price $1.

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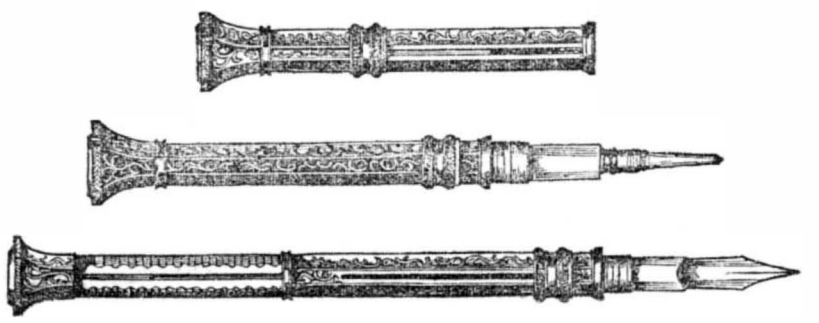

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CURIOUS ARTS

Chemical Tests.

Dissolve three or four grains of sulphate of iron in a goblet full of water, and add a few drops of the solution to a wine-glass full of water, and then drop into the mixture tincture of galls. The water will speedily acquire a purplish hue. This shows that every drop f the quart of water in which the sulphate of iron was dissolved contains a notable portion of the salt.

Let fall one drop of sulphuric acid into two quarts of water, and no alteration will follow; but if a drop of muriate of barytes be added, a white precipitate will immediately be produced.

The sulphuric acid combines with the barytes, and forms with it a highly insoluble salt, (sulphate of barytes) which produces the precipitate. Muriate of barytes is therefore an excellent test to discover sulphuric acid, as will become obvious from the following experiment:

Put a grain of sulphate of soda (Glauber's salt) into half a wine glass full of distilled water, and when dissolved, add to the solution a few drops of muriate of barytes. The same appearance will be perceived as in the preceding experiment. A like effect takes place if the liquid holds alum, Epsom salt, white vitriol, or any other sulphate, in solution,

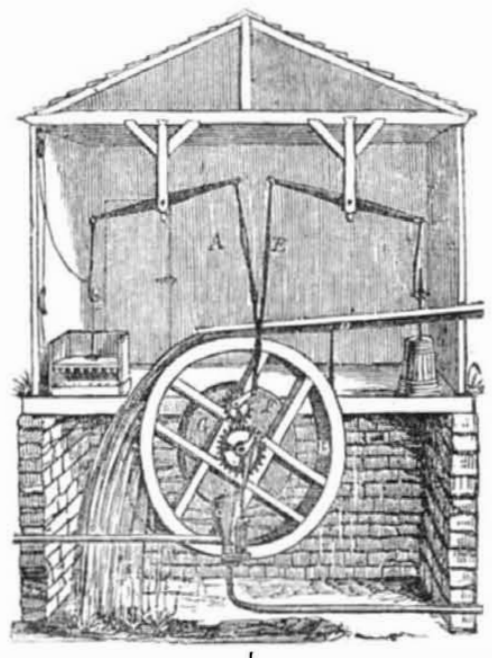
Dissolve one grain of glue, isinglass, or portable soap, in a goblet of water, and add to the solution a few drops of tan or tincture of galls, an abundant floeculent precipitate takes place, consisting of tan and gelatine. Tan is therefore a test for jelly. The power of tan as a test for gelatine is very great; for a copious and immediate precipitate is produced on adding a strong infusion of tan to water, containing only one-thousandth part of isinglass, and a very considerable precipitate when the gelatine is only the two-thousandth part.

First add a grain of iodine to a quart of water, and then let fall into the mixture a small portion of starch paste, the mixture will instantly acquire a blue color. Starch is therefore a test for iodine; it produces with it a blue precipitate, (ioduret of starch.) It will indicate the four hundred and fifty thousandth part of iodine in a liquid. Hence iodine and starch are tests for each other. The blue color produced by the contact of iodine and dissolued starch, varies, according as either the one or the other predominates. When the two bodies are in due proportion, the color is a pure indigo blue; but it is black when iodine prevails, and of a reddish blue or violet color when starch is in excess. When iodine is not present in the fluid, in a free or uncombined state, it is necessary to add to the solution, a very minute portion of any acid, in order to disengage the iodine from its combination.—Hence if a solution of starch be dropped into a fluid containing hydriodic acid, or iodic acid, no change takes place; but if an acid be added so as to disengage the iodine, the starch then instantly shows the presence of this substance, by the indigo color which it assumes.

Glass Water Pipes.

Sir Robert Peel declared his opinion, not long since in England, that glass water pipes would soon be laid down for the purest conveyance of water to the people. It is well known that water is poisoned by lead-pipes, and more than a year ago, we published certain articles in the Transcript, written by a respectable physician of this city against the use of that metal for water pipes. It has generally been thought that the action of water on lead is owing to the presence in it of carbonic acid, which forms carbonate of lead, which is a soluble poison. A paper, however, has recently been read before the British Association of Arts and Sciences, which is much commended by a writer in the "Gardener's Chronicle," of London. Mr. Osborne, the chemist, and author of the paper referred to, shows that atmospheric air, even when carbonic acid is absent, is a powerful solvent of lead, and that in some waters the evil is increased by the presence of chlorine, which forms a chloride of lead, another poisonous salt, soluble in water. It is, therefore, clear that lead pipes should never be employed for the conveyance of water to be consumed by man, beast, or plant. It is very true that water naturally impure—as for example, spring water impregnated with lime, is said not to act rapidly on lead, in consequence of its throwing down an earthy crust, which guards the lead from the solvent action of the water; but it is by no means clear that this preservation is as effectual as is supposed, and at all events, it can only operate after a time We therefore entirely agree in advising all persons to avoid the use of water brought through lead pipes. Glass is quite unobjectionable, and iron nearly so. Green bottle glass is cheaper than iron, and Mr. Osborne, as well as others, distinctly advises that it be used for purposes of conveyance.—*Transcript.*

THE FARMER'S WATER POWER.



The above cut presents a sectional view of a small building covering a water-wheel. To the shaft of the wheel a crank is attached by a shackle-bar to the piston rod of the pump. The shaft on the opposite side of the wheel carries a grindstone; above, to the right is a churn; at the left is a box for cleansing clothes, to which is attached a steam apparatus. This cut represents the works of Winthrop Phelps, Esq, of Chatham, Columbia Co., New York.

Discovery of Mezzotinto.

It is well known that many of the important discoveries in the arts and sciences, have been quite accidental, or have arisen from very trivial circumstances. The beautiful manner of finishing prints, called mezzotinto, was discovered by Prince Rupert, who, going out early one morning, observed a sentinel, at some distance from his post, very busy doing something to his piece. The Prince inquired what he was about. The soldier replied that the dew having fallen in the night, has made his fusee rusty, and that he was scraping and cleaning it. The Prince on looking at it, was struck with something like a figure eaten into the barrel, with innumerable little holes close together, like friezed work on gold or silver, part of which the soldier had scraped away.—He concluded that some contrivance might be found to cover a brass plate with such a grained ground of fine pressed holes, which would undoubtedly give an impression to all black, and by scraping away proper parts, the smooth superfices would leave the rest of the paper white. Communicating this idea to a painter, they made several experiments and at last invented a steel roller, cut with tools to make teeth like a file or rasp, with projecting points, which produced the black ground, which being scraped away and diminished at pleasure, left the gradations of light.

"Gun Tow" applied to Blasting.

A gentleman, who has been a manufacturer of gunpowder, in the west of Scotland, for the last 20 years, has been successful in several experiments with gun tow and gun sawdust, for blasting purposes. A perfectly satisfactory trial was made recently at the Lady Mill Quarry, in the presence of Professor Penny, and a number of other scientific gentlemen. One of the experiments was with a bore of 3 ft. 4 in., anc 2 1-2 diameter, charged with 11 ozs. tow and cotton, mixed, (4 lbs. gunpowder would be required) and which brought down about 13 to 15 tons in weight—the effect is represented as "splendid."

Construction of Oxy-Hydrogen Blowpipe.

This useful instrument consists of a cubical vessel, made of tin plate, being from ten to twenty inches in length, breadth and heighth. The inside is divided into four equal apartments, by two partitions, crossing each other in the centre. The two front apartments are covered at the top, and each of them have a tube fixed in the front side, near the top, with a stopcock. The other apartments are open at the top, and communicate with those in front, by a small aperture near the bottom of each. These apartments being all filled with water, those in front are filled, the one with oxygen, and the other with hydrogen gas, which is done by forcing the gases into them through the tubes in front, which causes the water to recede through the aperture at the bottom, and consequently part of the water is forced over the top of the other apartments; or rather may run off through small tubes, fixed for the purpose, near the top, similar to those in front. When the front apartments are filled with the gases, (which may be known by the bubbling in the others,) the tubes are stopped, and two leaden pipes are fixed in them, the opposite ends of which are so placed that the two streams of gas, when expelled from the gas holders, may come in contact very near the ends of the pipes. When the tubes are open, the pressure of the water will expel the gases, and will consequently settle, and must be replenished, so as to keep the apartments nearly full. When the two streams of gas are ignited at the point of contact, a flame is produced of sufficient intensity to burn gold, silver, copper or tin, with a very brilliant combustion.

The Fortunes of an Apprentice.

Judge Martin, who died in New Orleans at the age of 84, left his home at Marseilles while a lad, with 400 francs in money, $80. After rambling about the West Indies, he arrived friendless in North Carolina, and to avoid want, apprenticed himself to a printer. After three years service, he became a journeyman, and in a few years bought out his employer.—Some time afterwards he came to Louisiana, and finally, after studying law, he was made Judge of the Supreme Court. While holding this office, he became partner in a brick-yard. At the end of seven years, his partner died, and it was ascertained, as they had lived together, that their daily expenses only amounted to 25 cents. He was receiving $5000 salary as Judge, and large profits in his brick-yard; and instead of about 400 francs, his original capital, he had $400,000. He was a poor rich man, may have been considered parsimonious, but millions would not have induced him to swerve from the strict line of integrity and duty. See what stability will achieve.

According to statistics there is 18,000,000 worth of printing paper manufactured in this country every year.

Electricity vs. the Harpers.

Mr. Editor.

Since the desertion of copper wire formerly in use on the Telegraph route from New Haven to Hartford, via Wallingford, and the adoption of that stronger and larger wire of iron, I have noticed a novel fact, which is worth attention and extensive circulation,—less from its scientific importance, than from its musical taste. This iron wire is an Æolian Harp. Drawn very tense between the supporting posts, it vibrates a wide range of tones and the execution is delightful. In melody no less delicate and exquisite than the gentlest Æolian tuned in a lady's window, it is blended at fitful gusts and blasts of the wind; with that dynamic fullness of tone at the loudest swell, which is somewhat in proportion to the difference of instruments, the interval between a silk thread and a wire as large as the branch of a tree.

To be just and even-handed, I must next state what is the popular impression, and how the people explain it. The man who first called my attention to it gravely remarked, that when the electricity was passing, when the news was hurrying over this, like a bridge, then is the time we hear this melody, then the wires jar and ring. Well then, let Electricity turn music teacher, and he will soon bankrupt De Meyer, Ole Bull, the Hutchinsons and the Harpers. H.

Wallingford, Feb. 7th.

The Nantucket Inquirer says the light of the conflagration in Boston, was seen by the watch in both the towers in that place. The distance is about 90 miles.

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